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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,855	10/22/2003	Masanobu Shigeta	21994-00064-US	4217

30678 7590 10/12/2006

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EXAMINER

QI, ZHI QIANG

ART UNIT PAPER NUMBER

2871

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/689,855	Applicant(s) SHIGETA ET AL.	
	Examiner Mike Qi	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4 and 5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4 and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 15, 2006 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0145692 A1 (Ohkouchi et al) in view of US 6,426,786 B1 (Lu et al).

Regarding claims 4-5, Ohkouchi teaches (paragraphs 0050 – 0077; Figs. 7-10 and Fig.12) that a method of forming an alignment layer of a liquid crystal display comprises:

- positioning a base in a preselected orientation within a filming apparatus, because the substrate (2) transferred into deposition chamber (41) on the substrate tray (33) (see paragraph 0060), such that the substrate (2) would be

- as a base being positioned in a predetermined orientation within a deposition chamber (41) as a filming apparatus;
- directing a vapor stream of a material to form an inorganic alignment layer for the positioned base, because the evaporation source (43) (oxide silicon, i.e., an inorganic material) for forming the alignment layer deposition (see paragraph 0062), and the stream directed at the base (substrate) at an angle as shown in Fig.10 that evaporation angle (θ) set in a range of 50 to 55 degree to achieve decrease in disclinations (see paragraph 0064), and that is an angle of 40 to 60 degrees with respect to a normal line of the base as shown in Figs.7,8 and 10;
 - introducing oxygen gas into the filming apparatus and maintaining a predetermined gas pressure, because the deposition is performed under the oxygen pressure (see paragraph 0065), and the pre-tilt angle (α) is in the range of 2 to 4 degree as shown in Fig.12 (see paragraph 0076) so as to achieve a desired contrast ratio, and to evaporate the material for forming the inorganic (SiO_2) alignment layer on the base;
 - the oxygen pressure is in a range of $1 \times 10^{-2} \sim 5 \times 10^{-2}$ Pa for achieving certain thickness (see paragraph 0065), i.e., the oxygen gas pressure is 6×10^{-3} to 3×10^{-2} Pa.

Ohkouchi does not explicitly teach that the pre tilt angle of liquid crystal at an angle range of more than 4 to 10 degree.

Lu teaches (col.4, line 66 – col.5, line 3) that the pre-tilt angle is controlled to within about 0.2 to about 10° (overlap the range 4 to 10 degree). Lu indicates (col.4, lines 60-65) that the uniformity and the magnitude of the pre-tilt angle control the display quality such as contrast ratio and display uniformity, and the pre-tilt angle is controlled to 0.2 to 10 degree for achieving high-quality display (see col.4, line 66 – col.5, line 8) such as contrast ratio and display uniformity.

In the case where the claimed ranges “overlap or lie inside range disclosed by the prior art” a prima facie case of obviousness exists. (MPEP 2144.05. I.)

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the method of forming an alignment layer of Ohkouchi with the teachings of the pre-tilt angle of the alignment at 0.2 to 10 degree (including 4 to 10 degree) as taught by Lu, since the skilled in the art would be motivated for achieving a proper magnitude and uniformity of the pre-tilt angle and high-quality display such as contrast ratio and display uniformity.

Response to Arguments

2. Applicant's arguments filed on Aug.15, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that the critical range of the pre-tilt angle now claimed not anticipated by the cited reference, it is respectfully point out that in Ohkouchi reference published on Oct.10, 2002 before one year of the filing date (Oct.22, 2003) of this application teaches the invention set forth above and combined

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with Lu reference since in Lu teaches (col.4, line 66 – col.5, line 3) that the pre-tilt angle is controlled to within about 0.2 to about 10° (overlap the range 4 to 10 degree) so as to achieve high quality display such as contrast ratio and display uniformity.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Mike Qi
Patent examiner
Oct. 2, 2006